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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/647,304	09/27/2000	Thomas Maurer	EYEM1100	7023
23394	7590	01/26/2005	EXAMINER	
ROBROY R FAWCETT 1576 KATELLA WAY ESCONDIDO, CA 92027			DASTOURI, MEHRDAD	
			ART UNIT	PAPER NUMBER
			2623	
DATE MAILED: 01/26/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/647,304

Applicant(s)

MAURER ET AL.

Examiner

Virginia M Kibler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendment received on 9/13/04 has been entered. Claims 1-32 remain pending.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 1-32 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 6, 13, 14, 16, and 18-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiskott et al. ("Face Recognition by Elastic Bunch Graph Matching").

Regarding claims 1, 13, 18, and 21, Wiskott et al. ("Wiskott") discloses automatically defining a region of interest in the image indicative of a predetermined feature of the person using an early vision cue (Abstract; Sect. 2.2-2.3) and automatically finding the location of the predetermined feature in the defined region of interest using elastic bunch graph matching (Sect. 2.2-2.3). Wiskott discloses using an early vision cue to define a region of interest (Abstract; Sect. 2.2-2.3). While Wiskott does not specify that the region of interest is less than ten percent of the image, in light of Wiskott's disclosure it would have been obvious to one of ordinary skill

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in the art to have modified the region interest to a specified size. Note, Wiskott discloses the region of interest having varying sizes (Sect. 3, para. 1). At the time of the invention, it would have been obvious to one of ordinary skill in the art to have modified the various sizes of the region of interest disclosed by Wiskott to include a region of interest comprising less than ten percent of the image. The motivation for doing so would have been because it is well known to vary the size of the region of interest depending on the application. Therefore, it would have been obvious to modify Wiskott to obtain the invention as specified in claims 1, 13, 18, and 21.

Regarding claim 2, Wiskott discloses the step of defining the region of interest includes roughly locating the region of interest using the early vision cue and the step of finding the location of the predetermined feature commences at a rough location provided by the step of defining the region of interest (Sect. 2.3).

Regarding claims 3 and 14, Wiskott discloses the early vision cues includes structure (Abstract).

Regarding claims 6 and 16, Wiskott discloses the predetermined feature is the person's face and the state of the person is described by node positions of facial elements (Abstract; Sect. 1; Figure 2).

Regarding claims 19 and 22, Wiskott discloses the elastic graph matching uses a model graph having nodes associated with wavelet jets (Sect. 1-2; Figure 3).

Regarding claims 20 and 23, Wiskott discloses the wavelet jets are based on Gabor wavelets (Sect. 2.1).

Regarding claims 24-27, the arguments analogous to those presented above for claims 1, 19, and 20 are applicable to claims 24-27.

Regarding claims 28-32, Wiskott et al. ("Wiskott") discloses automatically defining a region of interest in the image indicative of a predetermined feature of the person using an early vision cue (Abstract; Sect. 2.2-2.3) and automatically finding the location of the predetermined feature in the defined region of interest using elastic bunch graph matching (Sect. 2.2-2.3).

Wiskott discloses using structure as an early vision cue to define a region of interest (Abstract; Sect. 2.2-2.3), but does not appear to specify stereovision, motion, color, convexity, or topology. However, Wiskott discloses using a labeled graph representing a face wherein the nodes are located at facial landmarks (Sect. 2.2). It is well known in the art of face recognition to represent facial attributes using stereovision, motion, color, convexity, or topology. In light of Wiskott's disclosure it would have been obvious to one of ordinary skill in the art to have modified the early vision cue to include stereovision, motion, color, convexity, or topology. The motivation for doing so would have been because it is well known in the art of face recognition to use stereovision, motion, color, convexity, or topology to represent facial attributes and would enhance the versatility of the system to include using stereovision, motion, color, convexity, or topology. Therefore, it would have been obvious to modify Wiskott to obtain the invention as specified in claims 28-32.

5. Claims 4 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiskott et al. ("Face Recognition by Elastic Bunch Graph Matching") as applied to claims 3 and 14 above, and further in view of Maki et al. ("A Computational Model of Depth-Based Attention").

Regarding claims 4 and 15, Wiskott does not disclose using stereovision to produce histograms and silhouette images. However, Maki et al. ("Maki") discloses using stereovision to produce disparity histograms and silhouette images (Sect. 2-3; page 738). Wiskott and Maki are

combinable because they are from the same field of endeavor of computer vision. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the early vision cues disclosed by Wiskott to include using stereovision to produce disparity histograms and silhouette images. The motivation for doing so would have been because it is a well known methodology routinely implemented and provides relative depth information. Therefore, it would have been obvious to combine Wiskott with Maki to obtain the invention as specified in claims 4 and 15.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wiskott et al. ("Face Recognition by Elastic Bunch Graph Matching") as applied to claim 1 above, and further in view of Wurtz ("Object Recognition Robust Under Translations, Deformations, and Changes in Background").

Regarding claim 5, Wiskott does not expressly disclose defining the region of interest including background suppression. However, Wurtz discloses including background suppression (Sect. 2.4). Wiskott and Wurtz are combinable because they are from the same field of endeavor of face recognition. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified defining the region of interest disclosed by Wiskott to include background suppression. The motivation for doing so would have been to increase the accuracy of the system by providing background independence. Therefore, it would have been obvious to combine Wiskott and Wurtz to obtain the invention as specified in claim 5.

7. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiskott et al. ("Face Recognition by Elastic Bunch Graph Matching") as applied to claim 1 above, and further in view of Aboutalib et al. (5,867,587)

Regarding claim 7, Wiskott does not disclose a sequence of images. However, Aboutalib discloses tracking the location of the predetermined feature in a subsequent image of a sequence of images (Figure 2). Wiskott and Aboutalib are combinable because they are from the same field of endeavor of computer vision. At the time of the invention it would have been obvious to a person of ordinary skill in the art to have modified the location of the predetermined feature disclosed by Wiskott to include tracking in a subsequent image. The motivation for doing so would have been because it is a well known methodology routinely implemented in the art for a sequence of images.

Regarding claims 8 and 9, Wiskott does not appear to include correcting erroneous locations or reinitializing the tracking based on a predicted location. However, Aboutalib discloses correcting an erroneous location of a predetermined feature based on a model of typical facial features and reinitializing the tracking of the location of the predetermined feature based on a predicted location of the predetermined feature (Figure 7; Col. 3, lines 27-30; Col. 10, lines 35-60). Wiskott and Aboutalib are combinable because they are from the same field of endeavor of computer vision. At the time of the invention it would have been obvious to a person of ordinary skill in the art to have modified the model disclosed by Wiskott to include correcting an erroneous location and reinitializing tracking. The motivation for doing so would have been because it increases the accuracy of the tracking system of the predetermined feature. Therefore, it would have been obvious to combine Wiskott with Aboutalib to obtain the invention as specified in claims 8 and 9.

Regarding claim 10, Wiskott discloses using bunch graph matching (Sect. 2.3). The arguments analogous to those presented above for claim 9 are applicable to claim 10.

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8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wiskott et al. ("Face Recognition by Elastic Bunch Graph Matching") and Aboutalib et al. (5,867,587) as applied to claim 7 above, and further in view of Tuceryan et al. (6,044,168).

Regarding claim 11, Wiskott and Aboutalib do not appear to disclose animating a graphical head model. However, Tuceryan et al. ("Tuceryan") discloses using the location of the predetermined feature for animating a graphical head model (Figures 11 and 14; Col. 2, lines 53-58; Col. 3, lines 61-67, Col. 4, lines 1-7). Wiskott, Aboutalib and Tuceryan are combinable because they are from the same field of endeavor of computer vision. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the head model disclosed by Wiskott and Aboutalib to include animating a graphical head model. The motivation for doing so would have been because it greatly reduces the amount of data that needs to be processed making it highly desirable for video conferencing (Col. 7, lines 7-12). Therefore, it would have been obvious to combine Wiskott and Aboutalib with Tuceryan to obtain the invention as specified in claim 11.

9. Claims 12 and 17 rejected under 35 U.S.C. 103(a) as being unpatentable over Wiskott et al. ("Face Recognition by Elastic Bunch Graph Matching") as applied to claims 1 and 13 above, and further in view of Davis, Jr. et al. (5,839,000).

Regarding claims 12 and 17, Wiskott does not disclose determining the degree to which an eye is closed. However, Davis, Jr. et al. ("Davis") discloses determining the degree to which an eye is closed (Col. 3, lines 17-25). Wiskott and Davis are combinable because they are from the same field of endeavor of computer vision. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the face model disclosed by



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Wiskott to include determining the degree to which an eye is closed. The motivation for doing so would have been because it is well known and allows for the detection of a reaction of a user's face. Therefore, it would have been obvious to combine Wiskott with Davis to obtain the invention as specified in claims 12 and 17.

### ***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

***Contact Information***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Virginia M Kibler whose telephone number is (703) 306-4072. The examiner can normally be reached on Mon-Thurs 8:00 - 5:30 and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Virginia Kibler can be reached on (703) 306-4072. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Virginia Kibler  
01/18/05

**MEHRDAD DASTOURI**  
**PRIMARY EXAMINER**

